(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 341 574 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
14.12.2011 Bulletin 2011/50

(43) Date of publication A2:
06.07.2011 Bulletin 2011/27

(21) Application number: **10163095.2**

(22) Date of filing: **18.05.2010**

(51) Int Cl.:
H01M 8/04 *(2006.01)*

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
BA ME RS

(30) Priority: **30.12.2009 TW 098145689**

(71) Applicant: **Chung-Hsin Electric and Machinery Manufacturing Corp.**
Taipei County (TW)

(72) Inventors:
- **Chen, Yu-Jen**
  33383, Kwei Shan Township (TW)
- **Chou, Chen-Kun**
  33383, Kwei Shan Township (TW)
- **Wu, Yue-Lin**
  33383, Kwei Shan Township (TW)
- **Chen, Zong-Ji**
  33383, Kwei Shan Township (TW)
- **Wu, Chi-Bin**
  33383, Kwei Shan Township (TW)

(74) Representative: **Viering, Jentschura & Partner**
Grillparzerstrasse 14
81675 München (DE)

(54) Random controlled fuel cell power module

(57) The present invention discloses a random controlled fuel cell power module (100). The random controlled fuel cell power module (100) includes a power module system (10), a current detection unit (20), and a random control unit (30). The power module system (10) is composed of at least two parallel-connected DC/DC converters (10a)(10b), for providing the power for a load (2). The current detection unit (20) detects a load current value of the load (2). The random control unit (30) reads the load current value and randomly assigns a control mode to activate the DC/DC converters (10a)(10b) according to the load current value, so that the DC/DC converters (10a)(10b) can be equally used. Therefore, the failure rate of the DC/DC converters (10a)(10b) is reduced, the life of the power module system is relatively prolonged, and the stability of the power module system is simultaneously increased.

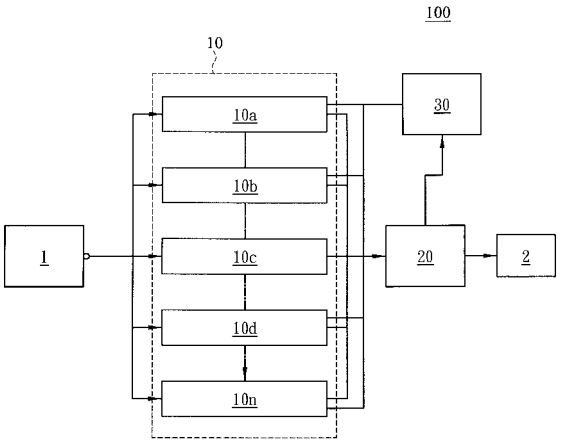

FIG. 3

EP 2 341 574 A3

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 16 3095

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2004/041473 A1 (DEGUCHI SHINICHI [JP]) 4 March 2004 (2004-03-04) * paragraphs [0003] - [0005], [0018] - [0044]; figures 1,3 *	1-7	INV. H01M8/04
Y	JP 2002 252935 A (NISSAN MOTOR) 6 September 2002 (2002-09-06) * paragraphs [0007] - [0010], [0015] - [0020], [0026] - [0038]; claims 1,3; figure 1 *	1-7	
Y	JP 2003 235252 A (TOYOTA MOTOR CORP) 22 August 2003 (2003-08-22) * paragraphs [0005] - [0035]; figures 1,6 *	1-7	
A	WO 2008/136978 A1 (BLOOM ENERGY CORP [US]; GURUNATHAN RANGANATHAN [IN]; SRINIVASAN RAMESH) 13 November 2008 (2008-11-13) * paragraphs [0007] - [0013], [0025] - [0040] *	1-7	

TECHNICAL FIELDS SEARCHED (IPC)
H01M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 November 2011	Crottaz, Olivier

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 16 3095

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-11-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004041473 A1	04-03-2004	CN 1630974 A	22-06-2005
		CN 101707370 A	12-05-2010
		EP 1433237 A2	30-06-2004
		JP 3695379 B2	14-09-2005
		JP 2003111384 A	11-04-2003
		US 2004041473 A1	04-03-2004
		WO 03032462 A2	17-04-2003
JP 2002252935 A	06-09-2002	JP 3711876 B2	02-11-2005
		JP 2002252935 A	06-09-2002
JP 2003235252 A	22-08-2003	NONE	
WO 2008136978 A1	13-11-2008	CN 101682262 A	24-03-2010
		US 2008280175 A1	13-11-2008
		WO 2008136978 A1	13-11-2008

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82